

CLAIMS:

We claim:

1. A nucleic acid encoding the carboxy-terminal portion of the heavy chain (H<sub>C</sub>) of botulinum neurotoxin (BoNT) selected from the group consisting of BoNT serotype A, BoNT serotype B, BoNT serotype C<sub>1</sub>, BoNT serotype D, BoNT serotype E, BoNT serotype F, and BoNT serotype G, wherein said nucleic acid is expressable in a recombinant organism selected from *Escherichia coli* and *Pichia pastoris*.
2. The nucleic acid of claim 1, wherein said nucleic acid comprises a nucleic acid sequence selected from SEQ ID No:1 (serotype A), SEQ ID No:7 (serotype B), SEQ ID No:9 (serotype C<sub>1</sub>), SEQ ID No:11 (serotype D), SEQ ID No:13 (serotype E), SEQ ID No:15 (serotype F), and SEQ ID No:17 (serotype G).
3. The nucleic acid of claim 1, wherein the nucleic acid encodes an H<sub>C</sub> amino acid sequence of BoNT selected from SEQ ID No:2 (serotype A), SEQ ID No:8 (serotype B), SEQ ID No:10 (serotype C<sub>1</sub>), SEQ ID No:12 (serotype D), SEQ ID No:14 (serotype E), SEQ ID No:16 (serotype F), and SEQ ID No:18 (serotype G).
4. A nucleic acid encoding the amino-terminal portion of the heavy chain (H<sub>N</sub>) of botulinum neurotoxin (BoNT) selected from the group consisting of BoNT serotype B, BoNT serotype C<sub>1</sub>, BoNT serotype D, BoNT serotype E, BoNT serotype F, and BoNT serotype G, wherein said nucleic acid is expressable in a recombinant organism selected from *Escherichia coli* and *Pichia pastoris*.
5. The nucleic acid of claim 4, wherein said nucleic acid comprises a nucleic acid sequence selected from SEQ ID No:21 (serotype B), SEQ ID No:23 (serotype C<sub>1</sub>), SEQ ID No:25 (serotype D), SEQ ID No:27 (serotype E), SEQ ID No:29 (serotype F), and SEQ ID No:31 (serotype G).
6. The nucleic acid of claim 4, wherein the nucleic acid encodes an H<sub>N</sub> amino acid sequence of BoNT selected from SEQ ID No:22 (serotype B), SEQ ID No:24 (serotype C<sub>1</sub>), SEQ ID No:26 (serotype D), SEQ ID No:28 (serotype E), SEQ ID No:30 (serotype F), and SEQ ID No:32 (serotype G).

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